

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application.

1. (Currently Amended) A screw pump, comprising:

a pair of screw rotors having teeth which are held in mesh with each other for drawing and discharging a fluid by ~~rotating said screw rotors synchronously~~ synchronized rotations thereof in opposite directions, said teeth of said screw rotors having the same shape as each other and being coiled helically in opposite directions;

wherein said teeth of said screw rotors have taper surfaces, respectively, that face each other, and

wherein each of said screw rotors has an axial tooth profile which allows a pair of facing teeth said taper surfaces of said screw rotors to be brought into contact with each other only at a pitch line ~~when said pair of facing teeth surfaces are brought into contact with each other.~~

2. (Currently Amended) A screw pump according to claim 1, ~~wherein~~ wherein:

said axial tooth profile comprises an outer circumferential section, a tooth root section, and two interconnecting sections for interconnecting said outer circumferential section and said tooth root ~~section,~~ section;

said outer circumferential section and said tooth root section are located apart from said pitch line by a substantially equal distance, ~~respectively, and~~ respectively;

one of said two interconnecting sections comprises an inclined-line which inclines with respect to a direction perpendicular to an axial direction of said screw rotor ~~in such a manner~~ that a tooth width of said screw rotor becomes smaller from said tooth root section toward said outer circumferential section; and

each of said taper surfaces comprises said one of said two interconnecting sections.

3. (Original) A screw pump according to claim 2, wherein a gradient of said inclined-line in a region from said pitch line to said outer circumferential section is larger than a gradient of said inclined-line in a region from said tooth root section to said pitch line.

4. (Currently Amended) A screw pump according to claim 3, ~~wherein~~wherein:

said teeth of said screw rotors have trochoid surfaces, respectively, located at opposite sides of said taper surfaces;

~~said teeth~~each of said screw rotors ~~have~~has a transverse tooth profile including a trochoid curve generated by a point on an outer circumferential surface of said screw rotor at companion side, or a curve similar to said trochoid ~~curve, and~~curve;

the other of said two interconnecting sections corresponds to said trochoid curve or said curve similar to said trochoid curve; and

each of said trochoid surfaces comprises said other of said two interconnecting sections.

5. (Original) A screw pump according to any one of claims 1 to 4, further comprising:
a pair of rotating shafts to which said screw rotors are fixed; and
a pair of magnet rotors attached to said rotating shafts;
wherein said magnet rotors have the same number of magnetic poles as each other, and
said magnet rotors are arranged such that unlike magnetic poles of said respective magnet rotors
attract each other.

6. (Original) A screw pump according to claim 5, further comprising:
plural-phase armatures having cores and windings and being disposed radially outwardly
of at least one of said magnet rotors;
wherein at least one of said magnet rotors is driven by switching currents flowing to said
armatures so that said screw rotors are rotated synchronously in the opposite directions.

7. (Original) A screw pump according to any one of claims 1 to 4, further comprising:
a pair of rotating shafts to which said screw rotors are fixed; and
plural pairs of magnet rotors attached to said rotating shafts;
wherein said magnet rotors have the same number of magnetic poles as each other with
respect to each pair of said magnet rotors, and said plural pairs of said magnet rotors are arranged
such that unlike magnetic poles of said respective magnet rotors attract each other.

8. (Currently Amended) A method of operating a screw pump having a pair of screw rotors whose teeth have the same shape as each other and are coiled helically in opposite directions, comprising:

bringing ~~a pair of facing teeth~~ taper surfaces of said teeth of said screw rotors into contact with each other only at a pitch line; and

rotating said screw rotors synchronously in opposite directions so as to draw and discharge a fluid.

9. (New) A screw pump according to claim 1, wherein:

said teeth of said screw rotors have trochoid surfaces, respectively, that face each other;
and

said trochoid surfaces are kept out of contact with each other.

AMENDMENTS TO THE DRAWINGS

Fig. 9 has been amended to label the figure with the legend "Prior Art". A replacement sheet representing Fig. 9 is attached to the last page of this paper.